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ning of each regular issue of the PCT Gazette.

(54) Title: METHOD OF PLASTID TRANSFORMATION IN ASTERACEAE, VECTOR FOR USE THEREIN AND PLANTS  
THUS OBTAINED

(57) Abstract: The present invention relates to a method for the transformation of plastid genomes of plant species, in particular  
*Asteraceae* plant species, comprising the steps of providing a transformation vector carrying a DNA sequence of interest; subjecting  
a plant material, which comprises plastids, to a transformation treatment in order to allow the plastids to receive the transforma-  
tion vector; placing the thus treated plant material for a period of time into contact with a culture medium without selection agent;  
subsequently placing the plant material into contact with a culture medium comprising a selection agent; and refreshing the culture  
medium comprising a selection agent to allow plant material comprising plastids that have acquired the DNA of interest to grow into  
transformants.

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/08948

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 C12N15/82

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 05265 A (BAILEY ANA MARIA ;INVEST Y DE ESTUDIOS AVANZADOS (MX); BLOWERS ALA) 4 February 1999 (1999-02-04) page 43, line 13 - line 23 page 45, line 20 -page 46, line 2; examples 2,10	1-13, 16-33, 36-40
X	WO 01 81605 A (MONSANTO TECHNOLOGY LLC) 1 November 2001 (2001-11-01)  example 3  ----- -/--	1-13, 16-33, 36-40

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>HIBBERD JULIAN M ET AL: "Transient expression of green fluorescent protein in various plastid types following microprojectile bombardment"</p> <p>PLANT JOURNAL, vol. 16, no. 5, December 1998 (1998-12), pages 627-632, XP002275465 ISSN: 0960-7412 page 629; figures 3C,3D</p>	36,37, 39,40
T	<p>DEPARTMENT OF BIOLOGY, NATIONAL UNIVERSITY OF IRELAND, MAYNOOTH, PUBLICATIONS , 'Online! XP002275466 Retrieved from the Internet: &lt;URL:http://www.may.ie/academic/biology/publications/main.shtml&gt; 'retrieved on 2004-03-30! the whole document &amp; MCCABE, M., ET AL.: "Developing the lettuce plastid as an edible vaccine production system" ANNUAL EU 5TH FRAMEWORK MEETING, 10-13 JAN. 2002, THE NETHERLANDS.,</p>	1-40
A	<p>VAN BEL AART J E ET AL: "Novel approach in plastid transformation" CURRENT OPINION IN BIOTECHNOLOGY, vol. 12, no. 2, April 2001 (2001-04), pages 144-149, XP002275467 ISSN: 0958-1669</p>	
E	<p>DATABASE WPI Section Ch, Week 200412 Derwent Publications Ltd., London, GB; Class B04, AN 2004-110053 XP002275468 &amp; CN 1 429 906 A (GANSU YASHENG GROUP), 16 July 2003 (2003-07-16) abstract</p>	1-40

# INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9905265	A	04-02-1999	AU 8583798 A	16-02-1999
			WO 9905265 A2	04-02-1999
			ZA 9806574 A	12-01-2000
WO 0181605	A	01-11-2001	AU 5730001 A	07-11-2001
			EP 1276886 A2	22-01-2003
			WO 0181605 A2	01-11-2001
			US 2002042934 A1	11-04-2002
CN 1429906	A	16-07-2003	NONE	